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AUTHOR Rush, R. Timothy
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ABSTRACT

The performance-related writing and reading competencies required in most occupations are seldom emphasized in elementary and secondary school education. Performance-related writing may be simplistic, but its composition is more complex--in occupational writing, context, audience assessment, attention to detail, concise clarity, message organization, and organization of relevant illustrations are more important than style and mechanics. Occupational reading seems simple, but it depends heavily on the use of prior knowledge and insightful interpretation. Given awareness of occupational competencies and the need for their instruction, teachers of most subjects can show students how to write and read task-oriented messages and how to find and use information. While work-related writing instruction could require varied information formats, occupationally-relevant reading instruction should address identification and use of appropriate resources and references. Cooperative efforts should establish logical connections between reading, writing, and vocational applications. For example, Applied Communication, a problem-based learning curriculum which focuses on the needs of high school vocational students, is being developed through the cooperative efforts of vocational and English communication experts. (Two sets of examples, one containing samples of typical occupational writing, and the other, samples of typical occupational reading, are included.) (JK)

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R. Timothy Rush
University of Wyoming
October 1987

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WRITING, READING AND REALITY

R. Timothy Rush
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Research shows that writing and reading are almost universally required in the workplace. They are used together and in conjunction with speaking and listening as tools for solving work-related problems. The performance-related writing and reading competencies required in most occupations, while present in routine classroom activities, are seldom emphasized in elementary and secondary school education.

Use distinguishes writing at school from writing at work. In school settings, writing is employed to communicate lengthy, coherent, grammatically correct pieces which provide evidence of learning. At work, the products of writing are very brief. The writing of workers is produced in short bursts related to specific tasks. It is concise and accurate, but it typically violates the standards of convention and style which are stressed in academic settings. There are direct parallels in school uses of writing, i.e., test-taking, and laboratory activities.

As with writing, differences between school and workplace reading are not so much related to skills as to uses. The primary use of reading at school is to facilitate long-term learning. When learning is its goal, reading is employed in protracted periods of study. Occupational reading is seldom concerned with learning. Rather, it involves efficient gathering and use of information in the performance of work. Like writing tasks, on-the-job reading is done for short periods. Usually, information is forgotten soon after it is read, as workers proceed from one task to another. In both school and work settings, readers are expected to identify important information and to follow directions.

An essential difference between work and school is that workers, more so than students, must genuinely understand information relevant to the task at hand. They rely heavily on prior knowledge, experience, and reference to illustrations and workplace materials while composing and reading on-the-job messages.

Occupational Writing and Reading

Writing

Writing is an important component of job performance. Recent research (Mikulecky and Ehlinger, 1986) indicates that workers in skilled jobs spend about thirty minutes per work day in tasks involving writing. Such writing rarely continues uninterrupted for more than a minute at a time; speaking, listening, reading, and task performance intervene so that all four language/thinking processes seem to operate simultaneously. Writing is an essential part of intricate occupational problem solving processes.

Much about occupational writing might dishearten teachers of English. Occupational writing is very informal and "ungrammatical," (Rush, Moe, and Storlie, 1986). Notes are typically written in sentence fragments, with sketches, diagrams, attachments, or references to objects serving to clarify meaning. Writers assume that their readers will know enough about the task at hand to interpret written messages correctly. As Example 1 suggests, clear written communication in occupational settings seems to depend more on knowledge of subject and audience than on grammar and mechanics.

Insert Example 1 about here

In workplace writing, use of incomplete sentences and "bending" of the rules of written English is accepted practice. It is equally acceptable to do so in many occupational training situations (Moe, Rush, and Storlie, 1980).

Performance-related writing may be simplistic, but its composition is more complex. It seems a simple matter to dash off notes using the "telegram syntax" of work. But, when such notes are poorly prepared, they are very difficult to interpret. In occupational writing, context, audience assessment, attention to detail, concise clarity, message organization, and integration of relevant illustrations are more important than style and mechanics. Yet, mastery of style and mechanics can enhance the clarity which is so essential in work settings.

Reading

Workers typically perform reading tasks requiring finding/using information (about two-thirds of on-the-job reading) and following directions. These tasks involve use of checklists, forms, work orders, and reference manuals in which information is presented in various text and graphic formats. On the job, it is typical for essential information to appear in combinations of text and graphics.

Occupational reading, which requires use of external references and following directions, is typified by the texts in Example 2. While such tasks seem simple, they depend heavily on use of prior knowledge and insightful interpretation.

Insert Example 2 about here

Mikulecky (1982) and Kirsch and Guthrie (1983) observe that high school students (vocational and academic) are poorly prepared for the reading demands of work. Compared to workers, students read less frequently and less competently. The reading strategies of students are less effective, and their reading materials less difficult than those of workers.

An Instructional Approach

Teacher awareness of occupational competencies and the need for their instruction has a great deal to do with preparing students for the writing and reading demands of work. Given awareness, teachers of most subjects can conveniently teach students how to write and read task-oriented messages, and how find and use information. The commonalities of many work and school tasks and materials suggest that effective occupational writing and reading instruction should use existing, rather than newly developed methods. English and vocational educators, in particular should explore the mutual benefits of teaching occupational writing and reading competencies.

Cooperative efforts should establish logical connections between reading, writing, and vocational applications. Writing and reading are used in solving occupational problems. So, such problems should be documented and used to make English instruction more meaningful. After observing instructors or workers modelling the use of note-taking, memo writing, and reading in job performance, students can apply written language skills to similar occupational problems. Vocational teachers, if not directly involved in teaching writing and reading can, at least, reinforce those competencies which are taught in English classrooms.

General Instructional Methods

Another way of saying that occupational writing and reading are task-oriented is to say that they are used in problem solving. Whatever instructional methods are selected should be applied to solve practical problems.

Problem-based occupational writing can be conveniently addressed by nearly all teachers because accessing information and following directions are nearly universally required in school. A common work-related writing problem is the preparation of instructions for others to follow. Relevant activities should begin with reasonably short sets of steps, like lists of jobs to be done, and proceed to complex instructions, such as recipes and assembly tasks.

Work-related writing instruction should require varied information formats. Because occupational writing involves integration of graphics with text, students should learn to prepare simple tables, charts, and sketches which clarify

written information.

Two-thirds of occupational reading involves finding and using information. So, occupationally-relevant reading instruction should address identification and use of appropriate resources and references. In general, the library search format (general to specific) should be directly related to on-the-job applications. Specifically, students should learn how to use tables, charts, graphs, figures, and other graphic information formats, especially when textual information is adjacent to the graphics.

Abilities to use text and graphic formats apply to the second major component of occupational reading -- following instructions. Students should be skillful in relating text to graphics as they carry out procedures with materials and equipment. Students should learn that this sort of reading requires a slow, methodical approach in which understanding of the goal is central. Instruction should stress planning, checking, and frequent back-and-forth referrals between text and graphics.

An International Instructional Project

Concern over the seemingly poor preparation of students for the literacy demands of work has caused the National Commission on Secondary Vocational Education (1985) and the Southern Regional Education Board's Commission on Secondary Education (1985) to specifically call upon schools to address the writing and reading deficiencies of students in occupational training programs.

During the summer of 1986, the nonprofit Agency for Instructional Technology (AIT) enlisted the financial support of educational agencies in nearly all states and provinces of the United States and Canada to fund the development of Applied Communication, a problem-based learning curriculum which focuses on the needs of high school vocational students. The curriculum involves videotape presentations of work situations to which reading, writing, and oral language are applied in solving vocationally relevant problems.

Applied Communication is being developed through the cooperative efforts of vocational and English communication experts, and will yield ten instructional modules. Each module addresses specific objectives in written and oral language and problem solving. The curriculum is designed for use as a "stand alone" course, as part of existing vocational or English courses, or to support resource room instruction.

AIT has recently completed the instructional design phase of the project and has begun development of videotape programs

which form the core of each module. Each module will contain a teacher's handbook and print materials for student use in group and independent activity.

Initial field testing and evaluation of the curriculum was conducted during September. Dissemination of Applied Communication to state- and province-level education departments will occur during mid-1988.

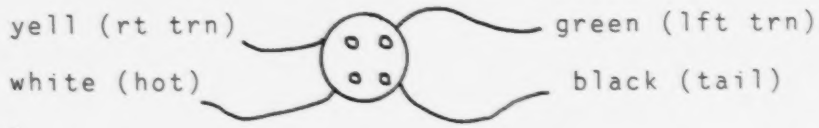
Interested Wyoming school districts are invited to participate in training for pilot project implematation of the Applied Communication program by contacting Dr. Mary Zimmerer of the University of Wyoming Department of Vocational Education. Districts in other states should contact their departments of education for information.

EXAMPLE 1

Samples of Typical Occupational Writing

A. Automotive Electrical (note from a worker on one shift to a co-worker on the next)

Pete -
Internal runs finished. Hook up external like this.



TNX Mack

B. Account Clerk (memo attached to voucher)

Mr. Swain
A new one. Balance less than payment. Please advise.

C. Machinist (remarks on required form)

Operation Performed: "press in bushing and burnish"
Procedures: "Sizes on print. Have gages set or checked for size. Read and fill out work card."

D. Drafting (corrective remarks on drawing)

Sht 1 - D-603E
Add platform & ladder galvanizing - use cad. plated bolting-remove vessel painting requirement & make blast cleaned to spec SSPC-SP10-G3T (Note #5)
Add "Stencil P. O. N#," etc. (Note #6)

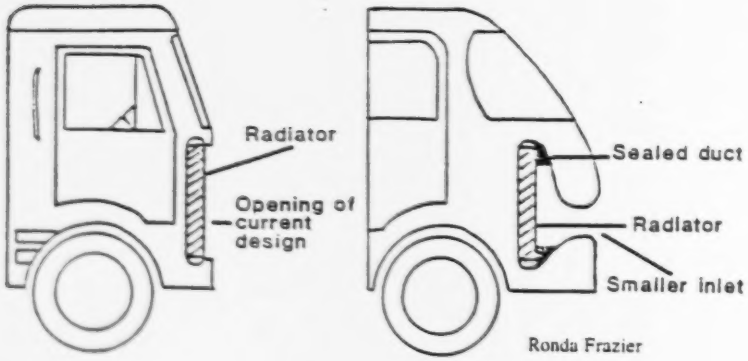
E. Heating/Air Conditioning (work orders)

Job 1: Men's restroom copper tubing in tank broke. Is leaking on floor.
Job 2: No water coming into washbowl in bathroom.
Job 3: Broken line under house. Crawl space full of water.

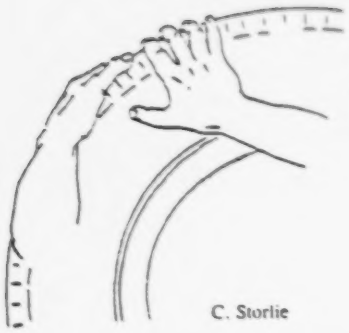
F. Licensed Practical Nurse (hospital training questionnaire)
Q: Why must you read the material?
A: "understand diabetic, clinitest teaching, knowledge of diabetic (full understanding)"

EXAMPLE 2
Samples of Typical Occupational Reading

TEXT AND PICTURE*



Current truck radiator installation design (left) requires flat front. Air resistance can be reduced by a streamlined design (right) where ducts bring sufficient cooling air to the radiator.



Placement of Hands in Checking Wheel Bearing Play

Wheel bearing adjustment can be checked by a push-pull procedure. Place one hand at ten o'clock on the outboard side of the tire. Place the other hand on the inside. Push and pull. Note any play. Adjust as necessary.

Inspection Openings

All pressure vessels for use with compressed air, except as permitted otherwise in this paragraph, and those subjected to internal corrosion, or having parts subject to erosion or mechanical abrasion (see UG-25) shall be provided with a suitable manhole, handhole, or other inspection opening for examination and cleaning. (Pressure Vessel Codebook, p. 42)

Tabled Information

Building Element	Type I	Type II			Type III		Type IV	Type V	
	Noncombustible				Combustible				
	Fire Resistive	Fire Resistive	1 Hr.	N	1 Hr.	N	M.T.	1 Hr	N
Exterior Bearing Walls	4 Sec. 1803 (a)	4 1903 (a)	1	N	4 2103 (a)	4 2103 (a)	4 2103 (a)	1	N
Interior Bearing Walls	3	2	1	N	1	N	1	1	N
Exterior Nonbearing Walls	4 Sec. 1803 (a)	4 1903 (a)	1	N	4 2103 (a)	4 2103 (a)	4 2103 (a)	1	N

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